

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION**

COMMWORKS SOLUTIONS, LLC,

Plaintiff

-against-

CHARTER COMMUNICATIONS, INC. and
SPECTRUM GULF COAST, LLC,

Defendants.

Civil Action No.: 6:22-cv-00156

Jury Trial Demanded

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff CommWorks Solutions, LLC (“CommWorks” or “Plaintiff”), by way of this Complaint against Defendants Charter Communications, Inc. and Spectrum Gulf Coast, LLC (collectively “Charter” or “Defendants”), alleges as follows:

PARTIES

1. Plaintiff CommWorks Solutions, LLC is a limited liability company organized and existing under the laws of the State of Georgia, having its principal place of business at 44 Milton Avenue, Suite 254, Alpharetta, GA 30009.
2. On information and belief, Defendant Charter Communications, Inc. is a corporation organized and existing under the laws of the State of Delaware, having its principal place of business at 400 Atlantic St, Stamford, CT 06901. Charter Communications, Inc. may be served through its registered agent Corporation Service Company dba CSC - Lawyers Incorporating Service Company, 211 E. 7th Street, Suite 620, Austin, TX, 78701.
3. On information and belief, Defendant Spectrum Gulf Coast, LLC is a limited liability company organized and existing under the laws of the State of Delaware and is a wholly owned

subsidiary of Charter Communications, Inc., having its principal place of business at 12405 Powerscourt Drive, St. Louis, MO 63131. Spectrum Gulf Coast, LLC may be served through its registered agent Corporation Service Company d/b/a CSC-Lawyers Incorporating Service Company, 211 E. 7th Street, Suite 620, Austin, TX, 78701. On information and belief, Spectrum Gulf Coast, LLC is registered to do business in the State of Texas and has been since at least September 1, 2012.

JURISDICTION AND VENUE

4. This is an action under the patent laws of the United States, 35 U.S.C. §§ 1, *et seq.*, for infringement by Charter of claims of U.S. Patent No. 6,832,249; U.S. Patent No. 7,027,465; U.S. Patent No. 7,177,285; U.S. Patent No. 7,760,664; U.S. Patent No. 7,911,979; and U.S. Patent No. RE44,904 (collectively “the Patents-in-Suit”).
5. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).
6. Charter is subject to personal jurisdiction of this Court because, *inter alia*, on information and belief, (i) Charter maintains a regular and established place of business in Texas in this Judicial District at 2720 W Loop 340, Waco, TX 76711 (*see also, inter alia*, 3034 S 31st St, Temple, TX 76502; 1000 E 41st St Suite 920, Austin, TX 78751; 1900 Blue Crest, San Antonio, TX 78247; 438 Northwest Loop 410, San Antonio, TX 78216); (ii) Charter sells products and services to customers in this Judicial District; and (iii) the patent infringement claims arise directly from Charter’s continuous and systematic activity in this Judicial District.
7. Venue is proper as to Charter in this Judicial District under 28 U.S.C. § 1400(b) because, *inter alia*, on information and belief, Charter has a regular and established place of business in this Judicial District located at 2720 W Loop 340, Waco, TX 76711 (*see also, inter alia*, 3034 S 31st St, Temple, TX 76502; 1000 E 41st St Suite 920, Austin, TX 78751; 1900 Blue Crest, San

Antonio, TX 78247; 438 Northwest Loop 410, San Antonio, TX 78216), and has committed acts of patent infringement in this Judicial District and/or has contributed to or induced acts of patent infringement by others in this District.

BACKGROUND

8. On December 14, 2004, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 6,832,249 (“the ’249 Patent”), entitled “Globally Accessible Computer Network-Based Broadband Communication System With User-Controllable Quality of Information Delivery and Flow Priority.” A true and correct copy of the ’249 Patent is attached hereto as Exhibit A.

9. At the time of the invention, millions of Internet users being online simultaneously, causing congestion (too many users) and latency (long pauses and delays), presented a difficult bandwidth load management challenge. Exhibit A at col. 1:32-34, 2:34-36. No conventional routing system existed that avoided the congestion and best effort delivery methods then used by the Internet. *Id.* at col. 2:8-10. Conventional routing systems relating to multiple OSI layers also did not consistently ensure quality of service. *Id.* at col. 6:53-63.

10. The invention of the ’249 Patent improved upon the conventional services delivery systems by enabling quality of service control by content providers, Application Service Providers (ASPs), ISPs, and, by extension, their customers. *Id.* at col. 3:60-63. Additional improvements over the conventional services delivery systems afforded by the invention of the ’249 Patent included bridging the gaps between the layers of the OSI reference model; ensuring more control by users over the priority of their information flow; more control by network administrators over the congestion of their networks; and more control by content providers over costs and the experiences they provide to their users. *Id.* at col. 3:65-4:2, 6:53-63.

11. On April 11, 2006, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 7,027,465 (“the ’465 Patent”), entitled “Method for Contention Free Traffic Detection.” A true and correct copy of the ’465 Patent is attached hereto as Exhibit B.

12. At the time of the invention, “conventionally … transmission differentiation based on priority was not conducted at all.” Exhibit B at col. 2:9-10. Obtaining priority information for traffic transmitted through an Access Point (AP) required searching all fields in all frames for indications of the priority state of the actual data frame, resulting in all fields in all frames being checked and all headers being analyzed, starting from the outer most headers, until the right field in the header had been found. *Id.* at col. 1:53-59. This measure was very complex, took a long time, and required a large amount of processing, especially for complex tunneling protocols. *Id.* at col. 1:62-65. All the frame headers and protocols which can be included in the data frames transmitted via the network had to be known, hence, the amount of information needed for identifying the data was huge. *Id.* at col. 1:66-2:4. Such a huge amount of information was typically too heavy to handle in small and low price equipment like WLAN access points (AP). *Id.* Further, then existing systems according to the IEEE 802.11 standard did not separate traffic based on priority. *Id.* at col. 2:11-15.

13. The invention of the ’465 Patent improved upon conventional network traffic routing systems by providing methods by which priority traffic can easily be distinguished from normal traffic without the need of complex processing making it possible to execute in a low cost and possibly low performance AP. *Id.* at col. 2:19-23, 2:60-62, 3:43. The methods of the invention of the ’465 Patent further improved upon conventional network traffic routing systems by easily finding higher priority traffic from the stream of MAC layer frames without necessarily requiring knowledge of the upper layer protocols. *Id.* at col. 2:53-56. The methods of the invention of

the '465 Patent further improved upon conventional network traffic routing systems by being protocol-independent and flexible such that their configuration may be done in an external configuration program; with the Access Point not needing to know anything about the processed traffic; further alleviating the need of complex structure of the device. *Id.* at col. 2:63-66, Col. 3:5-11. A further advantage over conventional network traffic routing systems is that installation of new software or hardware in the network element would not be required when new protocols or modified protocols are introduced in the network. *Id.* at col. 3:12-21.

14. On February 13, 2007, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 7,177,285 ("the '285 Patent"), entitled "Time Based Wireless Access Provisioning." A true and correct copy of the '285 Patent is attached hereto as Exhibit C.

15. At the time of the invention, wireless access to data networks was not yet conventional. Then existent systems for provisioning access to a network were impractical, such as for wireless devices which lacked a user interface configured for communicating provisioning information, or for simple home-based intranets, such as a wireless picture frame device lacking a control interface to read or extract identification information, such as a MAC address, to facilitate wireless access provisioning. Exhibit C at col. 3:13-26. Further, wireless devices that did have a dedicated user interface were incapable of, or cumbersome in, communicating device identification and exchanging provisioning information, still requiring a user to be technically proficient to properly initiate and complete a provisioning process. *Id.* at col. 3:27-36.

16. The invention of the '285 Patent improved upon existent network provisioning systems by enabling provisioning without requiring a user interface for the initiation of a provisioning process—"a major technological advance." *Id.* at col. 3:37-41. The invention of the '285 Patent further improved upon existent provisioning systems by providing a wireless access provisioning

structure and process with minimal device requirements and/or user proficiency, whereby a wireless device is readily provisioned by the provisioning system, and whereby other unauthorized devices within an access region are prevented from being provisioned by the provisioning system. *Id.* at col. 3:42-49. The invention of the '285 Patent further improved upon existent provisioning systems by providing a time-based wireless access provisioning system integrated with easily monitored parameters of a wireless device, such as the time monitoring of power on and/or start of signal transmission, for provisioning secure encrypted communication. *Id.* at col. 3:50-58.

17. On July 20, 2010, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 7,760,664 ("the '664 Patent"), entitled "Determining and Provisioning Paths in a Network." A true and correct copy of the '664 Patent is attached hereto as Exhibit D.

18. At the time of the invention, graphical systems for provisioning network paths were not yet conventional. Prior art systems for provisioning network paths typically modeled every port of every network element as a node on a graph and modeled every physical link that interconnected these ports to one another as links that interconnected the nodes of the graph. Exhibit D at col. 1:27-36. This resulted in very large, complex, and inefficient model graphs that did not adapt well to diverse network elements and large networks and created performance and scalability issues due to the demanding processing requirements associated with such graphs. *Id.* at col. 2:30-40.

19. The invention of the '664 Patent improved upon existent systems for provisioning network paths by enabling management of links instead of nodes in a graphical interface, reducing route processing, resulting in a corresponding reduction in overhead and resources required to route network traffic from one node to another. *Id.* at col. 3:32-35. The invention of

the '664 Patent further improved upon existent systems by reducing the number of nodes necessary to consider in routing network traffic from one point to another, greatly reducing the processing overhead and timeliness associated with making routing decisions. *Id.* at col. 4:53-65.

65. The invention of the '664 Patent further improved upon existent systems by adding considerable flexibility in designing and maintaining routing graphs. *Id.*

20. On March 22, 2011, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 7,911,979 ("the '979 Patent"), entitled "Time Based Access Provisioning System and Process. A true and correct copy of the '979 Patent is attached hereto as Exhibit E.

21. At the time of the invention wireless access to data networks was not yet conventional. Then existent systems for provisioning access to a network were impractical, such as for wireless devices which lacked a user interface configured for communicating provisioning information, or for simple home-based intranets, such as a wireless picture frame device lacking a control interface to read or extract identification information, such as a MAC address, to facilitate wireless access provisioning. Exhibit E at col. 3:19-31. Further, wireless devices that did have a dedicated user interface were incapable of, or cumbersome in, communicating device identification and exchanging provisioning information, still requiring a user to be technically proficient to properly initiate and complete a provisioning process. *Id.* at col. 3:32-41.

22. The invention of the '979 Patent improved upon existent network provisioning systems by enabling provisioning without requiring a user interface for the initiation of a provisioning process—"a major technological advance." *Id.* at col. 3:42-46. The invention of the '979 Patent further improved upon existent provisioning systems by providing a wireless access provisioning structure and process with minimal device requirements and/or user proficiency, whereby a wireless device is readily provisioned by the provisioning system, and whereby other

unauthorized devices within an access region are prevented from being provisioned by the provisioning system. *Id.* at col. 3:47-53. The invention of the '979 Patent further improved upon existent provisioning systems by providing a time-based wireless access provisioning system integrated with easily monitored parameters of a wireless device, such as the time monitoring of power on and/or start of signal transmission, for provisioning secure encrypted communication. *Id.* at col. 3:54-62.

23. On May 20, 2014, the United States Patent and Trademark Office duly and lawfully reissued U.S. Patent No. RE44,904 ("the '904 Patent"), entitled "Method for Contention Free Traffic Detection." A true and correct copy of the '904 Reissue Patent is attached hereto as Exhibit F.

24. At the time of the invention, "conventionally ... transmission differentiation based on priority was not conducted at all." Exhibit F at col. 2:9-10. Obtaining priority information for traffic transmitted through an Access Point (AP) required searching all fields in all frames for indications of the priority state of the actual data frame, resulting in all fields in all frames being checked and all headers being analyzed, starting from the outer most headers, until the right field in the header had been found. *Id.* at col. 1:63-2:2. This measure was very complex, took a long time, and required a large amount of processing, especially for complex tunneling protocols. *Id.* at col. 2:5-8. All the frame headers and protocols which can be included in the data frames transmitted via the network had to be known, hence, the amount of information needed for identifying the data was huge. *Id.* at col. 2:8-14. Such a huge amount of information was typically too heavy to handle in small and low price equipment like WLAN access points (AP). *Id.* Further, then existing systems according to the IEEE 802.11 standard did not separate traffic based on priority. *Id.* at col. 2:20-25.

25. The invention of the '904 Patent improved upon conventional network traffic routing systems by providing methods by which priority traffic can easily be distinguished from normal traffic without the need of complex processing making it possible to execute in a low cost and possibly low performance AP. *Id.* at col. 2:29-32, 3:2-4, 3:52-53. The methods of the invention of the '904 Patent further improved upon conventional network traffic routing systems by easily finding higher priority traffic from the stream of MAC layer frames without necessarily requiring knowledge of the upper layer protocols. *Id.* at col. 2:62-65. The methods of the invention of the '904 Patent further improved upon conventional network traffic routing systems by being protocol-independent and flexible such that their configuration may be done in an external configuration program; with the Access Point not needing to know anything about the processed traffic; further alleviating the need of complex structure of the device. *Id.* at col. 3:5-8, 3:14-21. A further advantage over conventional network traffic routing systems is that installation of new software or hardware in the network element would not be required when new protocols or modified protocols are introduced in the network. *Id.* at col. 3:22-31.

26. CommWorks is the assignee and owner of the right, title, and interest in and to the Patents-in-Suit, including the right to assert all causes of action arising under said patents and the right to any remedies for infringement of them.

NOTICE

27. By letter and email dated February 21, 2020, CommWorks notified Charter of the existence of the Patents-in-Suit and invited Charter to hold a licensing discussion.

28. By email dated March 9, 2020, CommWorks followed up with Charter with respect to its February 21, 2020 letter and email.

29. By email dated March 10, 2020, Charter responded and requested additional information from CommWorks, including which patents would be of interest to Charter.

30. By letter and email dated April 1, 2020, CommWorks notified Charter that it infringes each of the '249 Patent, '465 Patent, '285 Patent, '664 Patent, '979 Patent, and '904 Patent, among other patents; identified exemplary infringed claims and infringing Charter products and services, including Spectrum branded services; and invited Charter to hold a licensing discussion with CommWorks.

31. By email dated April 20, 2020, CommWorks followed up with Charter and again extended an invitation to hold licensing discussions.

32. By email dated May 6, 2020, CommWorks again followed up with Charter and extended an invitation to hold licensing discussions.

33. By email and letter dated June 11, 2020, Charter declined to enter an NDA with CommWorks and requested claim charts for CommWorks patents against Charter.

34. By email dated August 13, 2020, CommWorks supplied Charter with exemplary claim charts for each of the Patents-in-Suit.

COUNT I: INFRINGEMENT OF THE '249 PATENT BY CHARTER

35. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

36. On information and belief, Charter has infringed the '249 Patent, pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by providing services to its customers that make, use, offer to sell, sell in the United States or import into the United States the Ciena devices that run Service Aware Operating System (SAOS), as well as Juniper devices running Junos OS, and other equipment utilizing substantially similar methods of providing broadband communications over a multi-layered network used by Charter to provide services to its customers ("Accused Products and Services").

37. For example, on information and belief, Charter has infringed and continues to infringe at least claim 32 of the '249 Patent by making, using, offering to sell, selling, and/or importing the

Accused Products and Services, which perform a method [of claim 31] for providing broadband communications over a multi-layered network having a plurality of Open System Interconnection (OSI) reference model layers functioning therein. *See Ex. 1* (showing a Charter-Spectrum Network Engineer's responsibilities include ensuring "proper implementation of Juniper MX, EX and QFX series routers and switches ... and Ciena Optical Network Systems" and "Tuning up ... Ciena Network systems."); *Exs. 2-4* (showing that Ciena devices running Service-Aware Operating Systems (SAOS), including the Ciena LE-311v and Ciena 6500 platform, facilitate broadband communications over an OSI model multi-layered network, e.g., a network having at least OSI model layers 2 and 3, and have MPLS Fast Reroute functionality as standardized in IETF RFC 4090); *Ex. 5* (showing that Juniper devices running Junos OS facilitate broadband communications over an OSI model multi-layered network, *e.g.*, a network having at least OSI model layers 2 and 3, and have MPLS Fast Reroute functionality as standardized in IETF RFC 4090). The method of providing broadband communications over a multi-layered network of each of the Accused Products and Services comprises monitoring at least one OSI reference model layer functioning in the multi-layered network. *See Ex. 6* (showing that Ciena devices and Junos OS devices with MPLS Fast Reroute monitor and detect a failure of a node and/or link associated with the Internet Protocol (IP) layer, *i.e.*, OSI model layer 3, in the communications network). The method of providing broadband communications over a multi-layered network of each of the Accused Products and Services further comprises determining that a quality of service event has occurred in the multi-layered network. *See Ex. 6* (showing that Ciena devices and Junos OS devices with MPLS Fast Reroute determine the occurrence of a quality of service event, *i.e.*, a failure condition, such as packet loss and/or latency, of a node and/or link associated with an IP address, thereby affecting network quality of

service with particular effect on the quality of real time application services). The method of providing broadband communications over a multi-layered network of each of the Accused Products and Services further comprises determining that the quality of service event occurred at layer 3 in the OSI reference model and that the layer 3 quality of service event is related to an Internet Protocol (IP). *See Ex. 6* (showing that Ciena devices and Junos OS devices with MPLS Fast Reroute determine that a node and/or link associated with an IP address has failed in OSI model layer 3 thereby affecting network quality of service). The method of providing broadband communications over a multi-layered network of each of the Accused Products and Services further comprises responding to the quality of service event in the multi-layered network by changing network provisioning at layer 2 in the OSI reference model, wherein the change at layer 2 includes resolving the quality of service event using multiprotocol label switching (MPLS). *See Ex. 6* (showing that Ciena devices and Junos OS devices with MPLS Fast Reroute respond to the quality of service event by changing the provisioning of the data traffic path at OSI model layer 2 which is less than OSI model layer 3 using MPLS by switching the routing of packets to a pre-established backup LSP detour using a one-to-one backup method and/or backup LSP tunnel using a facility backup method). The method of providing broadband communications over a multi-layered network of each of the Accused Products and Services further comprises signaling that the network provisioning at layer 2 of the OSI reference model has been changed. *See Ex. 6* (showing that Ciena devices and Junos OS devices with MPLS Fast Reroute send messages and/or notifications signaling that the data traffic path has changed to the backup LSP tunnel at OSI model layer 2). The method [of claim 31] of providing broadband communications over a multi-layered network of each of the Accused Products and Services further comprises wherein resolving the quality of service event using multiprotocol label

switching further comprises balancing data traffic throughout the network. *See* Ex. 6 (showing that Ciena devices and Junos OS devices with MPLS Fast Reroute re-route data traffic when a node or link fails and balances data traffic, *e.g.*, by routing time sensitive data through the shortest possible path in the network).

38. On information and belief, Charter has induced infringement of the '249 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, its partners, customers, and end users, to use, sell, and/or offer to sell in the United States, and/or import into the United States, the Accused Products and Services by, among other things, providing the Accused Products and Services, specifications, instructions, manuals, advertisements, marketing materials, and technical assistance relating to the installation, set up, use, operation, and maintenance of said products. *See* ¶ 27 above (explaining that CommWorks notified Charter of infringement by notice letter dated April 1, 2020); Ex. 1 (showing a Charter-Spectrum Network Engineer's responsibilities include ensuring "proper implementation of Juniper MX, EX and QFX series routers and switches ... and Ciena Optical Network Systems" and "Tuning up ... Ciena Network systems."); Exs. 2-4 (showing that Ciena devices running Service-Aware Operating Systems (SAOS), including the Ciena LE-311v and Ciena 6500 platform, facilitate broadband communications over an OSI model multi-layered network, *e.g.*, a network having at least OSI model layers 2 and 3, and have MPLS Fast Reroute functionality as standardized in IETF RFC 4090); Ex. 5 (showing that Juniper devices running Junos OS facilitate broadband communications over an OSI model multi-layered network, *e.g.*, a network having at least OSI model layers 2 and 3, and have MPLS Fast Reroute functionality as standardized in IETF RFC 4090).

39. On information and belief, Charter has committed the foregoing infringing activities

without a license.

40. On information and belief, Charter knew the '249 Patent existed and knew of exemplary infringing Charter products and services while committing the foregoing infringing acts thereby willfully, wantonly and deliberately infringing the '249 Patent.

COUNT II: INFRINGEMENT OF THE '465 PATENT BY CHARTER

41. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

42. On information and belief, Charter has infringed the '465 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering for sale, selling, and/or importing into the United States Wi-Fi enabled modems and routers and Wi-Fi services, such as, for example, the Arris DG1670A (included in the “Accused Products and Services”).

43. For example, on information and belief, Charter has infringed at least claim 1 of the '465 Patent by making, using, offering to sell, selling, and/or importing the Accused Products and Services, which perform a method for detecting priority of data frames in a network. *See Ex. 7* (showing that “Spectrum-provided equipment” includes the “Arris DG1670A” router); *Ex. 8* (showing the Arris DG1670A router supports Wi-Fi Multimedia (“WMM”)); *Ex. 9* (showing that Charter’s WMM compatible Access Points, such as the exemplary Arris DG1670A, detect the priority of data frames in a network by mapping to the Access Category (“AC”) of the Enhanced Distributed Channel Access (“EDCA”) mechanism); *see also Ex. 10* (showing another example in which Charter’s 802.11-2007+ compatible Access Points detect priority data frames in a network by mapping the AC of the EDCA mechanism). The method for detecting priority of data frames comprises the step of extracting a bit pattern from a predetermined position in a frame. *See Ex. 9* (showing, for example, that in Wi-Fi enabled modems and routers, Charter’s WMM compatible Access Points extract a bit pattern from a predetermined position in a data frame, such as in the QoS Control field); *Ex. 10* (showing, for example, that in Wi-Fi enabled

modems and routers, Charter’s 802.11-2007+ compatible Access Points extract a bit pattern from a predetermined position in a data frame, such as in the QoS Control field). The method for detecting priority of data frames further comprises the step of comparing said extracted bit pattern with a search pattern. *See Ex. 9* (showing, for example, that Charter’s WMM compatible Access Points compare the extracted UP bit pattern with a search pattern, such as the Access Category (“AC”)); *Ex. 10* (showing, for example, that Charter’s 802.11-2007+ compatible Access Points compare the extracted TID bit pattern User Priority (“UP”) with the Access Category (“AC”) search pattern). The method for detecting priority of data frames further comprises the step of identifying a received frame as a priority frame in case said extracted bit pattern matches with said search pattern. *See Ex. 9* (showing, for example, that Charter’s WMM compatible Access Points identify the priority Access Category (“AC”) of the WMM Data frame if the UP of said frame matches an AC search pattern); *Ex. 10* (showing, for example, that Charter’s 802.11-2007+ compatible Access Points identify the priority Access Category (“AC”) of the data frame if the TID UP bit pattern matches an AC search pattern). In the method for detecting priority of data frames, the predetermined position in said frame is defined by the offset of said bit pattern in said frame. *See Ex. 9* (showing, for example, Charter’s WMM compatible Access Points predetermine the position of the bit pattern by inspecting the Frame Control field to anticipate which non-minimal field has data present in the frame MAC Header so the offset of the UP bit pattern can be determined); *Ex. 10* (showing, for example, Charter’s 802.11-2007+ compatible Access Points predetermine the position of the bit pattern by inspecting the Frame Control field to anticipate which non-minimal field has data present in the frame MAC Header so the offset of the TID bit pattern can be determined).

44. On information and belief, Charter has induced infringement of the ’465 Patent pursuant

to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, its partners, customers, and end users, to use, sell, and/or offer to sell in the United States, and/or import into the United States, the Accused Products and Services by, among other things, providing the Accused Products and Services, specifications, instructions, manuals, advertisements, marketing materials, and technical assistance relating to the installation, set up, use, operation, and maintenance of said products. *See ¶ 27 above* (explaining that CommWorks notified Charter of infringement by notice letter dated April 1, 2020); Ex. 7 (showing that “Spectrum-provided equipment” includes the “Arris DG1670A” router); Ex. 8 (showing the Arris DG1670A router supports Wi-Fi Multimedia (“WMM”)).

45. On information and belief, Charter has committed the foregoing infringing activities without a license.

46. On information and belief, Charter knew the ’465 Patent existed and knew of exemplary infringing Charter products and services while committing the foregoing infringing acts thereby willfully, wantonly and deliberately infringing the ’465 Patent.

COUNT III: INFRINGEMENT OF THE ’285 PATENT BY CHARTER

47. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

48. On information and belief, Charter has infringed the ’285 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering for sale, selling, and/or importing into the United States Wi-Fi enabled modems and routers and Wi-Fi services, such as, for example, the Arris DG1670A (included in the “Accused Products and Services”).

49. For example, on information and belief, Charter has infringed and continues to infringe at least claim 1 of the ’285 Patent by making, using, offering to sell, selling, and/or importing the Accused Products and Services, which perform a process for provisioning between a wireless device and a network. *See* Ex. 7 (showing that “Spectrum-provided equipment” includes the

“Arris DG1670A” router); Ex. 11 (showing the Arris DG1670A supports “WiFi Protected Setup (WPS)” and has a “WPS Button”); Ex. 12 (showing that Charter’s WPS compatible access points perform a process for provisioning between a wireless device and a network, such as a WLAN).

The process for provisioning comprises the step of tracking an operating parameter of the wireless device within a service area, wherein the operating parameter of the wireless device comprises an onset of a signal transmission of the wireless device. *See* Ex. 12 (showing that, for example, Charter’s WPS compatible access points monitors Probe Request {WSC IE, PBC}, wherein said Probe Requests include an onset of a signal transmission and PBC operating parameter in the onset signal Probe Request {WSC IE PBC} transmitted from an in range wireless device (enrollee) seeking access to the network). The process for provisioning further comprises the step of initiating provisioning of the wireless device if the tracked operating parameter occurs within a time interval. *See* Ex. 12 (showing that, for example, Charter’s WPS compatible access points initiate provisioning of the wireless device if the tracked operating parameter (transmission of signal seeking access) occurs within the 120-second time period (“Walk Time”)).

50. On information and belief, Charter has induced infringement of the ’285 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, its partners, customers, and end users, to use, sell, and/or offer to sell in the United States, and/or import into the United States, the Accused Products and Services by, among other things, providing the Accused Products and Services, specifications, instructions, manuals, advertisements, marketing materials, and technical assistance relating to the installation, set up, use, operation, and maintenance of said products. *See* ¶ 27 above (explaining that CommWorks notified Charter of infringement by notice letter dated April 1,

2020); Ex. 7 (showing that “Spectrum-provided equipment” includes the “Arris DG1670A” router); Ex. 11 (showing the Arris DG1670A supports “WiFi Protected Setup (WPS)” and has a “WPS Button”).

51. On information and belief, Charter has committed the foregoing infringing activities without a license.

52. On information and belief, Charter knew the ’285 Patent existed and knew of exemplary infringing Charter products and services while committing the foregoing infringing acts thereby willfully, wantonly and deliberately infringing the ’285 Patent.

COUNT IV: INFRINGEMENT OF THE ’664 PATENT BY CHARTER

53. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

54. On information and belief, Charter has infringed the ’664 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by providing services to its customers that make, use, offer to sell, sell in the United States or import into the United States the Ciena Blue Planet Manage, Control and Plan platform, as well as the Juniper Contrail platform, and all other equipment utilizing substantially similar methods of routing traffic used by Charter to provide services to its customers (“Accused Products and Services”).

55. For example, on information and belief, Charter has infringed and continues to infringe at least claim 7 of the ’664 Patent by making, using, offering to sell, selling, and/or importing the Accused Products and Services, which perform a method for routing network traffic between a first network and a second network, each of the networks comprising a plurality of network elements. *See* Ex. 1 (showing a Charter-Spectrum Network Engineer’s responsibilities include ensuring “proper implementation of Juniper MX, EX and QFX series routers and switches … and Ciena Optical Network Systems” and “Tuning up … Ciena Network systems.”); Ex. 13 (showing that Ciena’s Blue Planet Manage, Control and Plan (MCP) network

configuration management system routes network traffic between two networks wherein each network comprises a plurality of network elements that are connected by a digital cross connect, such as an Multiprotocol Label Switching (MPLS) Tunnel and/or an Ethernet [Virtual] Private Line (EPL/EVPL) Service); Exs. 14-17 (showing that Juniper Contrail Network configures and monitors network traffic between networks and network elements using a digital cross connection, e.g., VXLAN). The plurality of network elements of the Accused Products and Services are connected by a digital cross connect. *See* Exs. 13-17. The method for routing network traffic of each of the Accused Products and Services comprises the step of determining, with a network configuration management system, the interconnections created by said digital cross connect between at least two network elements in said plurality of network elements. *See* Ex. 13 (showing that Ciena's Blue Planet MCP network configuration management system configures MPLS Tunnels-and/or EPL/EVPL Services between at least two network elements, e.g., Ciena 5150, 8700, and/or 3930 devices, which includes determining the interconnections between the network elements); Exs. 16-17 (showing that Juniper Contrail determines and/or configures digital cross connections between network elements in different networks using VXLAN tunneling). The method for routing network traffic of each of the Accused Products and Services further comprises representing each of said interconnections as a link between said at least two network elements. *See* Ex. 13 (showing that Ciena's Blue Planet represents the MPLS tunnel as a link between network elements, for example, the Ciena 8700-1 device on the first network and the Ciena 8700-3 device on the second network); Exs. 16 and 18 (showing that Juniper Contrail represents the interconnections between the network elements as a link (VXLAN tunnel)). The method for routing network traffic of each of the Accused Products and Services further comprises storing a status of each of said interconnections in a cross connection

status database, wherein the status indicates whether a cross-connection using said digital cross connect was successfully provisioned. *See* Ex. 13 (showing that Ciena’s Blue Planet stores and displays the status, e.g., operational status, of the MPLS tunnel and/or EPL/EVPL service including whether the cross connection was successfully provisioned); Ex. 18 (showing that Juniper Contrail stores the status, e.g., connection status, the VXLAN tunnel between networking elements in different networks).

56. On information and belief, Charter has induced infringement of the ’664 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, its partners, customers, and end users, to use, sell, and/or offer to sell in the United States, and/or import into the United States, the Accused Products and Services by, among other things, providing the Accused Products and Services, specifications, instructions, manuals, advertisements, marketing materials, and technical assistance relating to the installation, set up, use, operation, and maintenance of said products. *See* ¶ 27 above (explaining that CommWorks notified Charter of infringement by notice letter dated April 1, 2020); Ex. 1 (showing a Charter-Spectrum Network Engineer’s responsibilities include ensuring “proper implementation of Juniper MX, EX and QFX series routers and switches … and Ciena Optical Network Systems” and “Tuning up … Ciena Network systems.”); Ex. 13 (showing that Ciena’s Blue Planet Manage, Control and Plan (MCP) network configuration management system routes network traffic between two networks wherein each network comprises a plurality of network elements that are connected by a digital cross connect, such as an Multiprotocol Label Switching (MPLS) Tunnel and/or an Ethernet [Virtual] Private Line (EPL/EVPL) Service); Exs. 14-17 (showing that Juniper Contrail Network configures and monitors network traffic between networks and network elements using a digital cross connection, e.g., VXLAN).

57. On information and belief, Charter has committed the foregoing infringing activities without a license.

58. On information and belief, Charter knew the '664 Patent existed and knew of exemplary infringing Charter products and services while committing the foregoing infringing acts thereby willfully, wantonly and deliberately infringing the '664 Patent.

COUNT V: INFRINGEMENT OF THE '979 PATENT BY CHARTER

59. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

60. On information and belief, Charter has infringed the '979 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering for sale, selling, and/or importing into the United States Wi-Fi enabled modems and routers and Wi-Fi services, such as, for example, the Arris DG1670A (included in the "Accused Products and Services").

61. For example, on information and belief, Charter has infringed and continues to infringe at least claim 1 of the '979 Patent by making, using, offering to sell, selling, and/or importing the Accused Products and Services, which include a provisioning process performed by a provisioning system having provisioning logic. *See Ex. 7* (showing that "Spectrum-provided equipment" includes the "Arris DG1670A" router); Ex. 11 (showing the Arris DG1670A supports "WiFi Protected Setup (WPS)" and has a "WPS Button"); Ex. 12 (showing, for example, that WPS compatible access points, such as the exemplary Arris DG1670A router, include a provisioning system having a provisioning logic (i.e. software and/or hardware components used to implement) that performs the PushButton Configuration ("PBC") provisioning process). The provisioning process of the Accused Products and Services comprises tracking by the provisioning logic, an operating parameter of a first device, wherein the operating parameter of the first device comprises an onset of a signal transmission of the first device. *See Ex. 12* (showing, for example, Charter's WPS compatible access point's

provisioning logic, i.e., Interface E, monitors a PBC operating parameter, such as an onset of a Probe Request {WSC IE PBC} sent by the first device (enrollee)). The provisioning process of the Accused Products and Services further comprises sending a signal to initiate provisioning of the first device with a network if the tracked operating parameter occurs within a designated time interval. *See* Ex. 12 (showing that, for example, Charter’s WPS compatible access point’s provisioning logic, such as Interface E sends a Probe Response {WSC IE, PBC} signal to initiate provisioning of the first device (enrollee) if the Probe Request {WSC IE PBC} occurs within the 120-second walk time).

62. On information and belief, Charter has induced infringement of the ’979 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, its partners, customers, and end users, to use, sell, and/or offer to sell in the United States, and/or import into the United States, the Accused Products and Services by, among other things, providing the Accused Products and Services, specifications, instructions, manuals, advertisements, marketing materials, and technical assistance relating to the installation, set up, use, operation, and maintenance of said products. *See* ¶ 27 above (explaining that CommWorks notified Charter of infringement by notice letter dated April 1, 2020); *See* Ex. 7 (showing that “Spectrum-provided equipment” includes the “Arris DG1670A” router); Ex. 11 (showing the Arris DG1670A supports “WiFi Protected Setup (WPS)” and has a “WPS Button”).

63. On information and belief, Charter has committed the foregoing infringing activities without a license.

64. On information and belief, Charter knew the ’979 Patent existed and knew of exemplary infringing Charter products and services while committing the foregoing infringing acts thereby

willfully, wantonly and deliberately infringing the '979 Patent.

COUNT VI: INFRINGEMENT OF THE '904 PATENT BY CHARTER

65. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

66. On information and belief, Charter has infringed the '904 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering for sale, selling, and/or importing into the United States Wi-Fi enabled modems and routers and Wi-Fi services, such as, for example, the Arris DG1670A (included in the “Accused Products and Services”).

67. For example, on information and belief, Charter has infringed and continues to infringe at least claim 7 of the '904 Patent by making, using, offering to sell, selling, and/or importing the Accused Products and Services, which perform a method comprising: detecting a received frame is a priority frame based, at least in part, on information in the received frame. *See Ex. 7* (showing that “Spectrum-provided equipment” includes the “Arris DG1670A” router); Ex. 8 (showing the Arris DG1670A router supports Wi-Fi Multimedia (“WMM”)); Exs. 9-10 (showing that in the Accused Products and Services, for example, Charter’s WMM and/or 802.11-2007+ compatible Access Points, such as the exemplary Arris DG1670A router, detect the priority of data frames by mapping to an Access Category (“AC”) based, at least in part, on information in the QoS Control field of a received frame, such as the UP subfield). The method includes extracting a bit pattern from a predetermined position in the received frame. *See Ex. 9* (showing, for example, that in Charter’s WMM compatible Access Points extract a bit pattern (i.e. UP subfield bit pattern) from a predetermined position in a data frame, such as in the QoS Control field); Ex. 10 (showing, for example, that Charter’s 802.11-2007+ compatible Access Points extract a bit pattern (i.e. TID) User Priority (“UP”) from a predetermined position in a data frame, such as in the QoS Control field). The method further includes comparing the extracted bit pattern with a search pattern. *See Ex. 9* (showing, for example, that Charter’s WMM

compatible Access Points compare the UP bit pattern with a search pattern, such as the Access Category (“AC”)); Ex. 10 (showing, for example, that Charter’s 802.11-2007+ compatible Access Points compare the TID bit pattern User Priority (“UP”) with the Access Category (“AC”) search pattern). In the method, the detecting is based on a match between the extracted bit pattern and the search pattern. *See* Ex. 9 (showing, for example, that Charter’s WMM compatible Access Points determine the Access Category (“AC”) transmit queue that the WMM Data frame belongs to if the UP of said frame matches to an AC search patter); Ex. 10 (showing, for example, that Charter’s 802.11-2007+ compatible Access Points determine the Access Category (“AC”) transmit queue that the data frame belongs to if the TID UP of said frame matches to an AC search pattern). The method transmits the received frame in a transmit period reserved for priority frames in response to the detecting. *See* Ex. 9 (showing, for example, that Charter’s WMM compatible Access Points transmit the received frame in a transmit period, such as the Transmission Opportunity (“TXOP”) interval associated with the priority of the AC queue said frame was assigned to); Ex. 10 (showing, for example, that Charter’s 802.11-2007+ compatible Access Points transmit the received frame in a transmit period, such as the Transmission Opportunity (“TXOP”) interval associated with the priority of the AC queue said frame was assigned to). The method adjusts a duration of the transmit period reserved for priority frames based on statistic information regarding sent priority frames. *See* Ex. 9 (showing, for example, that the TXOP may be exceeded based on statistic information regarding transmitted frames for each priority AC; Ex. 10 (showing similar functionality in Charter’s 802.11-2007+ compatible Access Points).

68. On information and belief, Charter has induced infringement of the ’904 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging

others, including, but not limited to, its partners, customers, and end users, to use, sell, and/or offer to sell in the United States, and/or import into the United States, the Accused Products and Services by, among other things, providing the Accused Products and Services, specifications, instructions, manuals, advertisements, marketing materials, and technical assistance relating to the installation, set up, use, operation, and maintenance of said products. *See ¶ 27 above* (explaining that CommWorks notified Charter of infringement by notice letter dated April 1, 2020); Ex. 7 (showing that “Spectrum-provided equipment” includes the “Arris DG1670A” router); Ex. 8 (showing the Arris DG1670A router supports Wi-Fi Multimedia (“WMM”)).

69. On information and belief, Charter has committed the foregoing infringing activities without a license.

70. On information and belief, Charter knew the ’904 Patent existed and knew of exemplary infringing Charter products and services while committing the foregoing infringing acts thereby willfully, wantonly and deliberately infringing the ’904 Patent.

PRAAYER FOR RELIEF

WHEREFORE, CommWorks prays for judgment in its favor against Charter for the following relief:

- A. Entry of judgment in favor of CommWorks against Charter on all counts;
- B. Entry of judgment that Charter has infringed the Patents-in-Suit;
- C. Entry of judgment that Charter’s infringement of the Patents-in-Suit has been willful;
- D. An order permanently enjoining Charter from infringing the Patents-in-Suit;

E. Award of compensatory damages adequate to compensate CommWorks for Charter's infringement of the Patents-in-Suit, in no event less than a reasonable royalty trebled as provided by 35 U.S.C. § 284;

F. Award of reasonable attorneys' fees and expenses against Charter pursuant to 35 U.S.C. § 285;

G. CommWorks' costs;

H. Pre-judgment and post-judgment interest on CommWorks' award; and

I. All such other and further relief as the Court deems just or equitable.

DEMAND FOR JURY TRIAL

Pursuant to Rule 38 of the Fed. R. Civ. Proc., Plaintiff hereby demands trial by jury in this action of all claims so triable.

Dated: February 11, 2022

Respectfully submitted,

/s/ Stafford Davis

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